

6. Sample or Item Material Morphology

Essential Information Element	Description	Type of Information	Units	Possible Values	Notes, etc.
Analysis Lab					
Analysis Run ID					
Date analysis start	Date at the start of the analysis	Date			
Date analysis end	Date and the end of the analysis	Date			
Material ChemState	The chemical state of the material	Multiple selection		Metal, Nitride, Oxide, Fluoride, Carbide, Other	
Grain Mean Size	The mean size of grains	Decimal	mm		
Grain Minimum Size	The minimum size of grains	Decimal	mm		

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Grain Maximum Size	The maximum size of grains	Decimal	mm		
Grain size histogram	files with histogram	file			
Grain Size Comments	Comments	String			
Grain Instrument Type	The type and technique used to measure the grain size	String			
Shape_n	The shape of the grains	Multiple selection		Cylindrical, hexagonal, embedded box, irregular, square, plate, rod, sphere, annular, other	
Shape homogeneity	Are the shapes homogenous	Binary		Y/N	

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Aspect Ratio	Aspect Ratio on how symmetrical the grains are 1=perfect sphere	Decimal			
Aspect homogeneity	Is the aspect ratio homogenous	Binary		Y/N	
Inclusions Form	The chemical form of the inclusions	Multiple selection		Nitride, Oxide, Fluoride, Carbide, Other	
Inclusions comment	Comment	String			
Volume		Decimal	cc		
Volumetric displacement		Decimal	cc		
Microscopy method		Multiple select		TEM, SEM, XRD, Optical microscope	

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SEM method		Multiple select		Backscattered electron, reflection, secondary electron, transmission, X-ray map	
TEM method		Multiple select		Bright field, diffraction pattern, energy field	
Optical microscope type		Multiple select		Crossed polars, First order red, Oblique, Reflected, Transmitted	
Optical microscopy files_n	File with data and images from optical microscopy	Files			
Optical microscopy comments	Comments	String			

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SEM files_n	Files with data and images from SEM	files			
SEM comments	Comments	String			
TEM files_n	Files with data and images from TEM	files			
TEM comments	Comments	String			
XRD files_n	Files with data and images from XRD	files			
XRD comments	Comments	String			
Density		Decimal	g/cc		

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Reflected Color		Multiple select		Blue, Brown, Colorless, Silver, Pink, Green, Rust/Burnt Orange, Orange, Red, Grey, Mottled/Variegated, Violet, White, Black, Yellow, Opaque	
Transmitted Color		Multiple select		Blue, Brown, Colorless, Silver, Pink, Green, Rust/Burnt Orange, Orange, Red, Grey, Mottled/Variegated, Violet, White, Black, Yellow, Opaque	
Texture comments	comments	String			
Friability		Character			Place holder for fields associated with friability



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Porosity	Porosity of sample	Decimal	?		
Orientation image (OIM)			?		
Evidence of Corrosion	Corrosion present	binary	Y/N		
Evidence of Cladding	Clad present	binary	Y/N		
Evidence of Twinning and Twinning Structure		binary	Y/N		
File upload_n	File upload	Character		Upload a list of files	
Comments_n	Comments	Character		List of comments	